object-lessons. With the assistance of voluntary helpers, the staff provided for the table during the year more than 2500 specimens of freshly gathered wild-flowers, the greatest number on a single day being 168, on July 23.

THE Proceedings of the council of the Institute of Chemistry from July to October of the present year show that the council has directed the attention of the Local Government Board to the desirability of making the condition of appointment of public analysts attractive to candidates with the highest qualifications, and has also urged that the tenure of offices held by men of such ability and experience should be made more secure. Approval is expressed of the action of the County Council of East Suffolk, which has lately set an example by empowering the county coroner to order an analysis by a properly qualified analyst in any case of suspected poison, not being one of alleged foul play. The council has deemed it desirable to advise fellows or associates of the institute who may be seeking appointments in India to make sure they are gazetted as officers, and recognised as such in the regulations of the department under which they are seeking appointment, so that they may not find themselves in a position inferior to that to which they have a right, both officially and socially.

THE annual report of the Smithsonian Institution for the year ending June 30, 1906, has been received. Of its 546 pages, ninety-one refer to administrative matters, and include the reports of the executive committee of the Board of Regents and the acting secretary, Mr. Richard Rathbun, together with the Acts and Resolutions of Congress relative to the Smithsonian Institution adopted during the year. The appendix is again the most extensive and interesting part of the publication. Among other important contributions to this part of the volume we notice the translations of Madame Curie's opening lecture at the Sorbonne on November 5, 1906, on modern theories of electricity and matter; Prof. Himstedt's essay on radio-activity; M. H. Radau's account of astronomy on Mont Blanc; an abstract of M. A. Lacroix's description of Vesuvius in eruption in April, 1906; M. E. Bugnion's contribution to polyembryony and the determination of sex; Herr E. Pfizenmayer's contribution to the morphology of the mammoth; M. L. Cuénot's lecture on heredity; M. A. Yermoloff's description of the bisons of the Caucasus; Dr. Jakob Huber's account of the founding of colonies by Atta Sexdens; M. Hugues Obermaier's description of Quaternary human remains in central Europe; Prof. R. Blanchard's lecture on zoology and medicine; and M. Eugène Lemaire's account of the *rôle* of chemistry in paintings. Among original contributions to the appendix are those of Mr. C. G. Abbot on recent progress in astronomical research, and Mr. C. J. Blanchard on the national reclamation of arid lands. Royal Institution discourses reprinted include those of Mr. Marconi on recent advances in wireless telegraphy, and Prof. Schuster on international science. As usual, the appendix contains a profusion of beautiful illustrations.

A THIRD impression of Dr. David Nabarro's "Laws of Health" has been published by Mr. Edward Arnold. The book provides a simply worded description of the organs of the human body, and much sensible advice as to how to ensure their health and general well-being. The author has acquainted himself with the needs of schools, and his book should be of service to teachers in the preparation of lessons on elementary hygiene.

THE third volume of the "Index of Economic Material in Documents of the States of the United States" has been received. The index is being prepared for the department of economics and sociology of the Carnegie Institution of Washington, and is being published by the institution. The present instalment is by Adelaide R. Hasse, and is concerned wholly with the documents of Vermont, and deals with the years 1789–1904. The index is confined to printed reports of administrative officers, legislative committees, and special commissions of the States, and to governors' messages. It does not refer particularly to constitutions, laws and legislative proceedings, or to court decisions.

OUR ASTRONOMICAL COLUMN.

A LARGE SOLAR PROMINENCE.—Dr. A. A. Rambaut, F.R.S., sends us particulars of a large solar prominence observed by him on Friday last, November 15, at the Radcliffe Observatory, Oxford. Using a slit tangential to the sun's limb, a prominence having the form of two smooth rounded hills was observed at 11h. 45m., and it quickly increased in height until it filled the slit. A few minutes later the whole aperture in the brass plate to which the jaws of the slit were attached on the collimator was not large enough to contain the whole of the outburst. The prominence was in position-angle 273° on the sun's disc measured in the usual way from the north point through east. A sun-spot of fair size, surrounded by masses of bright faculæ, was visible in nearly the same position-angle and near the limb. In the interval between 11h. 56m. and 12h. 10m., that is, in fourteen minutes, the height of the prominence increased 140,000 miles, so the rate of increase was 10,000 miles per minute, or 167 miles per second. The height attained was 324,600 miles.

MELLISH'S COMET, 1907*e*.—A new set of elements, calculated from places observed on October 15 and 19 and November 2, and a daily ephemeris for comet 1907*e*, are published by Herr M. Ebell in No. 4212 (p. 195, November 7) of the *Astronomische Nachrichten*. The following is an abstract from the ephemeris:—

Ephemeris 12h. (M.T. Berlin).

1907	α (app.) h. m.	δ (app.) ° ′	log r	log Δ	Brightness
Nov. 20	2 14·3	+28 8·4	0·1720	9·7179	1·66
,, 24	1 32·0	+28 33·1	0·1855	9·7865	1·14
,, 28	1 1·9	+28 19·9	0·1987	9·8541	0·78
Dec. 2	0 40·5	+27 55·1	0·2116	9·9172	0·55
,, 6	0 25·3	+27 29·7	0·2243	9·9748	0·40

At the time of unit brightness (October 15) the comet's magnitude was about 9·5.

On November 23 the comet will pass about 40′ S. of α Trianguli, and on November 28 it will be 6¾° S. of β Andromedæ, crossing the meridian at about 8.30 p.m.

MARS AS THE ABODE OF LIFE.—The *Century Magazine* for November (No. 1, vol. lxxv., p. 113) contains the first of a series of articles on the possibility of Mars being inhabitable, in which Prof. Lowell discusses, as an introduction, the possible origin and evolution of planets. He commences with a description of meteorites, and traces out the various steps of the meteoritic hypothesis, and then defines six stages through which the cooling celestial mass passes in its progress from a self-luminous sun to a cold dead body. Discussing the present aspects of the planets, he shows that these are in accord with the stages defined, and points out that the crumpling which produces landscape variations is essentially an effect of cooling. The relative roughness of the surfaces of the earth, of Mars, and of the moon is then discussed, and the comparatively abnormal mountainous character of the last-named explained by its initial temperature being the temperature of the combined earth and moon masses, and therefore sufficient to produce, in the cooling of so small a mass, the huge lunar mountains with which we are familiar; the non-mountainous character of the Martian landscape is also explained. This first paper concludes with a discussion of the formation and distribution of continental and oceanic areas.

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SATURN'S RINGS.—Several recent observations of Saturn's rings are reported in No. 4213 (p. 219, November 10) of the *Astronomische Nachrichten*. Dr. Ristenpart reports that on November 5 he was able to see the ring distinctly, as a ghost-like fine line, with the 12-inch equatorial of the Urania Observatory at Berlin.

Prof. Hartwig, observing at Bamberg on November 7, was surprised to find that the ring on both sides appeared of a reddish-brown colour. The shadow of the rings on the surface of the planet was very distinct, and broader than it was four weeks previously. A telegram from Cambridge (Mass.) reports that Prof. Lowell confirms the observation of the symmetrical knots in Saturn's rings made by Prof. Campbell.

In the same journal Herr Paul Guthnick places on record the results of observations of Saturn's rings and satellites made at the Royal Observatory, Berlin, during part of the week referred to by Prof. Campbell.

ELEMENTS AND EPHEMERIS FOR THE MINOR PLANET PATROCLUS.—A set of elements and an ephemeris, covering the period October 31 to November 16, for Patroclus (1906 VY), one of the three Jovian asteroids, are given in No. 4212 (p. 193, November 7) of the *Astronomische Nachrichten* by Herr V. Heinrich. The opposition will take place on November 30, the magnitude of the minor planet being 14·5.

COMPARISONS OF THE PLACES OF MARS FOR THE OPPOSITIONS OF 1907 AND 1909.—In a paper communicated to the Royal Astronomical Society (Monthly Notices, vol. lxvii., No. 9, p. 575) Dr. Downing compares the places of Mars calculated from Newcomb's tables with the places calculated from Le Verrier's tables near the times of opposition in 1907 and 1909. The results are tabulated for every eight days from May 26 to August 14, 1907, and from August 14 to November 2, 1909. On September 23, 1909 (near the time of opposition), the correction to Le Verrier's place is $-10{\cdot}5$ seconds of arc in R.A. and $-5''{\cdot}5$ in declination, to his heliocentric longitude of Mars $-4''{\cdot}1$, and to the longitude of the sun $-0''{\cdot}9$; the distance of Mars from the earth will be 0·39.

SCIENCE AT THE FRANCO-BRITISH EXHIBITION OF 1908.

IT has been announced in various newspapers that there will be a Franco-British Exhibition next year. Those who have passed near Uxbridge Road will have also noticed that a large area of ground is being covered rapidly with exhibition buildings.

According to its prospectus, it is to be an exhibition of science, arts, and industries, and it is a matter of concern to all English men of science to see that in such an exhibition science is given its proper place.

Up to the present time no accounts of any attempt to represent science at this exhibition have been made public; we give, therefore, a short sketch of the efforts which are being made to have a pure science section as a part of the exhibition. Such a section is a novelty in exhibitions, and that there will be a science section is due to the action of the British Science Guild. That body approached the executive committee of the exhibition, suggesting that a section should be set apart for pure science, dealing mainly with original research as carried on both in the laboratory and in factories.

The executive committee accepted the suggestion, and a committee was formed which has been at work since June last.

It is hoped that the French side of the exhibition will deal with French science in a similar way.

The committee is constituted as follows:—Sir Norman Lockyer, K.C.B., F.R.S., chairman; Prof. John Perry, F.R.S., vice-chairman; Sir Alexander Pedler, C.I.E., F.R.S., hon. secretary. Members: Captain Sir Wm. de W. Abney, K.C.B., F.R.S., Prof. J. O. Arnold, Major B. F. S. Baden-Powell, Dr. F. A. Bather, Prof. C. V. Boys, F.R.S., Prof. Callendar, F.R.S., Major Close, R.E., Captain Ettrick W. Creak, R.N., C.B., F.R.S., Mr. Horace Darwin, F.R.S., Prof. J. A. Ewing, F.R.S., Prof. Farmer, F.R.S., Rear-Admiral Field, F.R.S., Mr. L. Fletcher, F.R.S., Mr. G. H. Fowler, Sir Archibald Geikie, K.C.B., F.R.S., Sir David Gill, K.C.B., F.R.S., Dr. R. T. Glazebrook, F.R.S., Prof. Gotch, F.R.S., Mr. Walter Rosenhain, Colonel Hellard, R.E.; Colonel Sir Thomas Holdich, K.C.M.G., K.C.I.E., C.B., Sir E. Ray Lankester, F.R.S., Dr. W. J. Lockyer, Prof. R. Meldola, F.R.S., Prof. H. A. Miers, F.R.S., Dr. H. R. Mill, Prof. Milne, F.R.S., Prof. Poulton, F.R.S., Lieut.-Colonel D. Prain, C.I.E., F.R.S., Sir William H. Preece, K.C.B., F.R.S., Sir William Ramsay, K.C.B., F.R.S., Dr. Ridewood, Mr. Frederick Rudler, I.S.O., Prof. Rutherford, F.R.S., Dr. W. N. Shaw, F.R.S., Mr. A. E. Shipley, F.R.S., Mr. L. J. Spencer, Dr. J. J. H. Teall, F.R.S., Prof. Silvanus Thompson, F.R.S., Prof. T. E. Thorpe, C.B., F.R.S., Prof. Trouton, F.R.S., Colonel Sir Charles M. Watson, R.E., K.C.M.G., C.B., Sir H. Trueman Wood.

The exhibits are for convenience subdivided into three sections:—

(*a*) Historical apparatus which has been used by eminent scientific discoverers, or has been the means of elucidating important truths.

(*b*) Instruments and methods used in experiments and observations, including those used in laboratory and works research.

(*c*) Instruments and methods used in and results obtained from the exploration of (1) the land; (2) the sea; (3) the air; (4) the heavens.

The various subjects are dealt with as follows:—

Division 1: arithmetic and mathematical science, geometry, measurement, molecular physics, and sound. Subcommittee, Prof. Perry, Prof. C. V. Boys, and Mr. Horace Darwin; convener, Prof. Perry.

Division 2: light and photography. Subcommittee, Captain Sir Wm. de W. Abney and Sir H. T. Wood; convener, Sir H. T. Wood.

Division 3: invisible radiations. Subcommittee, Prof. S. P. Thompson, Prof. Rutherford, and Hon. R. J. Strutt; convener, Prof. Rutherford.

Division 4: heat. Subcommittee, Prof. Callendar and Mr. Horace Darwin; convener, Prof. Callendar.

Division 5: magnetism and electricity. Subcommittee, Prof. S. P. Thompson, Prof. Trouton, and Sir Wm. H. Preece; convener, Prof. Trouton.

Division 6: chemistry. Subcommittee, Prof. Thorpe, Prof. Meldola, Sir Wm. Ramsay, and Sir Alex. Pedler; convener, ——.

Division 7: mineralogy and crystallography. Subcommittee, Prof. Miers, Dr. Fletcher, and Mr. L. J. Spencer; convener, Prof. Miers.

Division 8: animal biology. Subcommittee, Sir E. Ray Lankester, Prof. Gotch, Mr. A. E. Shipley, Prof. Poulton, and Dr. Ridewood; convener, Prof. Gotch.

Division 9: vegetable biology. Subcommittee, Lieut.-Colonel D. Prain and Prof. Farmer; convener, Prof. Farmer.

(1) *Exploration of the Land.*

Division 10: geography. Subcommittee, Sir D. Gill, General Sir T. Holdich, Prof. J. Milne, Colonel Sir Charles M. Watson, Colonel Hellard, and Major Close; convener, Colonel Sir C. M. Watson.

Division 11: geology. Subcommittee, Sir Archibald Geikie, Dr. J. J. H. Teall, Mr. F. Rudler, and Dr. F. A. Bather; convener, Mr. F. Rudler.

(2) *Exploration of the Sea.*

Division 12: oceanography and hydrography. Subcommittee, Rear-Admiral Field, Captain Creak, Mr. G. H. Fowler, and Mr. D. J. Matthew; convener, Captain Creak.

(3) *Exploration of the Air.*

Division 13: meteorology. Subcommittee, Dr. Shaw, Dr. Mill, and Major Baden-Powell; convener, Dr. Shaw.

(4) *Exploration of the Heavens.*

Division 14: astronomy. Subcommittee, Sir D. Gill, Sir Norman Lockyer, and Dr. Lockyer; convener, Dr. Lockyer.

Division 15: geodesy. Subcommittee, Committees 10 and 14 sitting together; convener, Major Close.

Division 16: metallography. This additional subsection

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